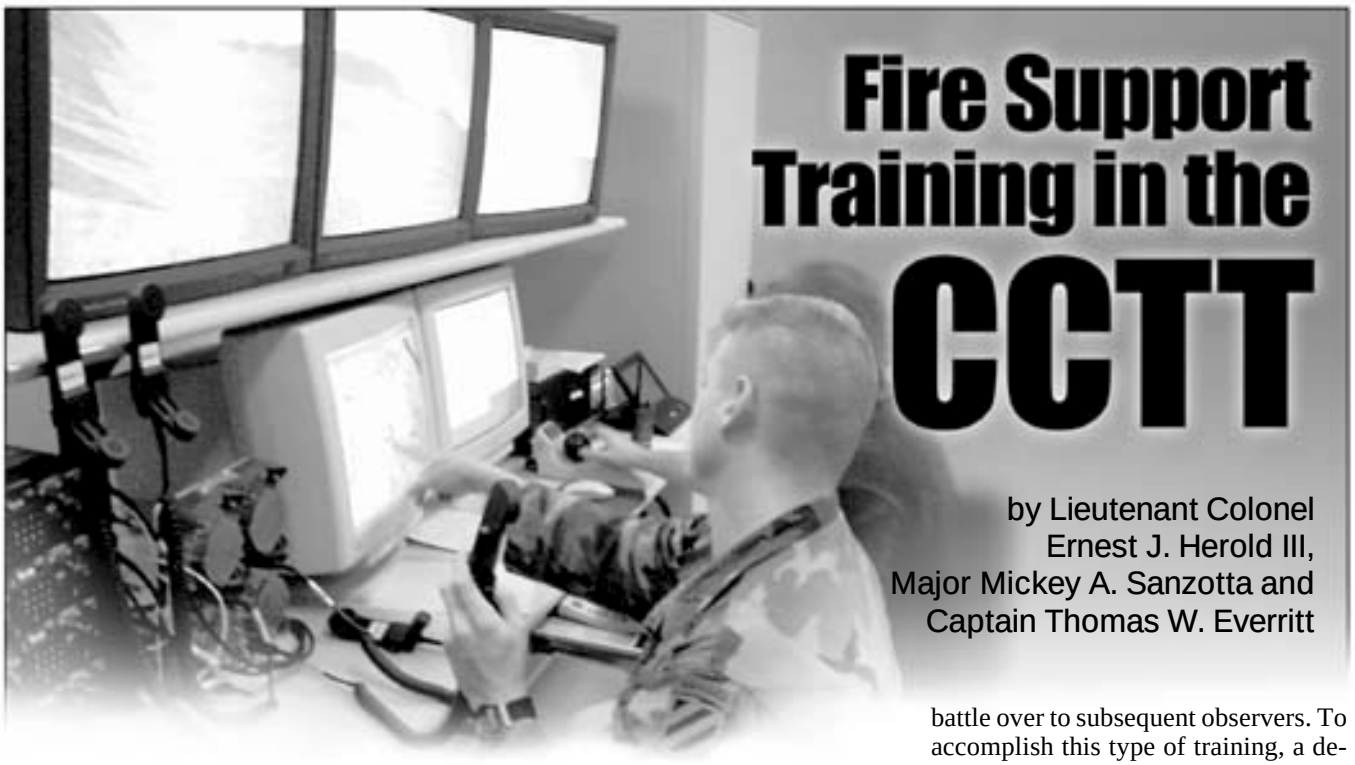

# Fire Support Training in the CCTT

by Lieutenant Colonel Ernest J. Herold III, Major Mickey A. Sanzotta and Captain Thomas W. Everritt

*"Hammer 30, this is COLT [combat observation lasing team] 1. I have 20 armored vehicles moving east, vicinity of Grid NK386174. Time is 0830. Over."*

*"This is Hammer 30, roger. Out."*

*"COLT 3, this is COLT 1. The lead element of the 20 victors is headed into the eastern Granite Pass, vicinity of Grid NK399195. Over."*

*"This is COLT 3, roger."* Break. *"Hammer 30, this is COLT 3. Fire KM0015 at-my-command. Over."*

*"COLT 3, this is Hammer 30. Message to observer, Steel Battalion, 6 DPICM [dual-purpose improved conventional munitions], KM0015."* Break. *"KM0015, ready. Over."*

*"Hammer 30, this is COLT 3. Fire KM0015. Over."*

*"COLT 3, this is Hammer 30. Fire KM0015. Out."*

*"Hammer 30, this is COLT 3. End of mission: two APCs [armored personnel carriers] burning, two tanks damaged."* Break. *"Let Battle 30 know he has 16 armored vehicles moving east toward Phase Line Dan, vicinity Grid NK420212. Time 0905. Over."*

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You might think this was a well-executed fire support battle drill at the National Training Center (NTC) at Fort Irwin, California. However, it's a fire support exercise conducted by soldiers of the 1st Battalion, 10th Field Artillery (1-10 FA), part of the 3d Infantry Division (Mechanized), at its close combat tactical trainer (CCTT), Fort Benning, Georgia.

The guard unit armory device, full-crew interactive simulation trainer (GUARDFIST) and the training set fire observation (TSFO) are great devices to train forward observers (FOs) on call-for-fire (CFF) procedures. With a little ingenuity, they can be used to train additional tasks, such as radio procedures and processing digital CFFs. However, GUARDFIST and the TSFO can't be used as a stimulus for many of the fire support tasks required for combined arms operations.

Fire supporters must be able to plan, rehearse and execute an integrated observation plan from a combat vehicle, track the battle, pass combat intelligence between observers and hand the battle over to subsequent observers. To accomplish this type of training, a device must be able to place multiple observers in an environment that realistically simulates their unique point of view from different positions on the battlefield. With a little imagination, the CCTT can be used to accomplish this mission.

This article gives an overview of the CCTT facility, discusses 1-10 FA's design of and workarounds for a task force-level fire support exercise and outlines the lessons learned while planning and executing the exercise.

**CCTT Overview.** The CCTT was designed to train a company/team-sized unit in combined arms operations. Soldiers conduct operations in combat vehicle simulators equipped with video screens that simulate realistic viewpoints of drivers, vehicle commanders, gunners, observers and dismounted infantry. Mock-ups of M577 command post carriers represent the task force (TF) tactical operations center (TOC), the mortar section, a direct support (DS) Field Artillery battalion fire direction center (FDC), as well as a logistics support center.

The CCTT facility can expand to the TF-level by manning up to 27 combat vehicle simulators and controlling the rest of the task force from semi-automated force (SAF) positions. Therefore, a TF could man almost two companies with combat vehicle simulators and simulate a company with SAF forces. Another scenario would place

company commanders and platoon leaders in combat vehicle simulators in control of SAF troops. The CCTT simulation is very flexible and can arrange many variations of manned simulators and SAF elements.

The CCTT facility has off-the-shelf training support package exercises that can be adapted to meet FA unit training objectives, or the unit can develop its own exercise. Using an existing training exercise significantly decreases planning time but may not meet all the unit's simulation requirements. Developing a unique scenario requires a lot of time, effort and coordination with the facility engineers; however, the end product will be an exercise tailored to the tasks the unit wants to train.

To design an exercise in the CCTT, the unit must produce an operations order (OPORD) with overlays, decide which simulators will be manned and which simulated, determine six-digit grids for all entities (vehicles, fighting positions, dismounted positions, minefields, etc.) and establish radio net structures. The unit also must determine the opposing force (OPFOR) strength, composition, disposition and courses-of-action (COA). Early and continuous coordination with the CCTT facility is critical to ensure the scenario is feasible and meets training objectives.

The major CCTT advantages are that it provides low-cost, excellent training in combined arms operations with manned combat vehicles and the ability to conduct superb after-action reviews (AARs) in an unequaled AAR facility. Time is the only appreciable expense of conducting a CCTT exercise; all other costs are negligible.

Combat simulators are a huge benefit for the M1 Abrams tank, M2 Bradley infantry fighting vehicle and M981 fire support team vehicle (FIST-V) crews. Inside the boxy simulation modules, crews operate controls and talk on vehicle inter-communications systems that replicate the "real McCoy." For example, the single-channel ground and airborne radio system (SINCGARS) mock-ups are so realistic that soldiers have to be stopped from attempting to hook-up digital devices to the faceplates, which appear functional.

As crews peer through sights or opened hatches, they are amazed at the simulated terrain and combat around them. The AAR facility offers top-notch visual and audio playback of the battle, including radio traffic from a macro-view down to the a view from a specific tank gunner's sight.

Another advantage of CCTT is the NTC terrain database. This offers a realistic view of the NTC battlefield, enabling soldiers to gain experience on terrain where the greatest challenges may occur. The NTC terrain also allows FOs to conduct observation training at much greater distances than on a post with heavily vegetated terrain.

**CCTT Fire Support TF-Level Exercise.** After observing maneuver task forces use the CCTT for training, Fort Benning Redlegs decided to design a multi-echelon training exercise for fire supporters. The training objectives were to exercise the entire fire support system (including the digital system): plan, rehearse and execute an integrated observation plan; perform battle tracking and hand-over; exercise the sensor-to-shooter link; and familiarize the unit with the NTC terrain.

We adapted the capabilities of the CCTT and designed a TF-level exercise capable of training a TF fire support element (FSE), company FISTs, COLTs, as well as the brigade FSE. Our design included the DS battalion FDC and the mortar FDC.

One drawback was that only one FIST-V simulator exists in the facility. To account for the lack of FIST-V simulators, we provided quick instruction on the M1 simulator and placed fire support officers (FSOs) and observers in these vehicles. This allowed each FSO to observe the battlefield with a capable observation, maneuver and communications platform. This option limits the number of radios available to the FSOs; however, it is not a significant training distracter.

The CCTT facility's fire support digital system consists of the advanced Field Artillery tactical data system (AFATDS) in the DS battalion FDC and TF FSE and forward entry device (FED) systems for observers in the FIST-V and both dismounted infantry modules. Our digital system consists of the initial fire support automated system (IFSAS) and hand-held terminal units (HTU). We adapted the CCTT system to ours by wiring our HTUs from the observers in the simulators to the TF FSE, brigade FSE and DS battalion FDC IFSAS. When a CFF was received, the FA battalion FDC processed it in the CCTT AFATDS to generate virtual fires in the simulation that observers see on the ground.

During a future exercise, we plan to remote a SINCGARS radio outside the facility to communicate with the platoon operation centers (POCs) and our 155-mm Paladin howitzers in a local training area. This will account for complete fire mission processing time and further train observers in targeting, triggers and observation planning.

**Lessons Learned.** We learned many lessons while planning and executing our fire support exercise in the CCTT facility. These include the capabilities and limitations of the facility and future considerations for fire support exercises.

*CCTT Capabilities.* Face-to-face coaching that was possible in CCTT is impossible on the actual terrain. It would

A CCTT Observer/Controller Station

be great if the FSO or the fire support NCO could stand on the same piece of ground as their FOs to coach them through observation post (OP) selection, target refinement, trigger points, etc. In the CCTT, this is a simple task. Instead of driving 20 kilometers over broken terrain, the trainer only walks a few feet to a simulator.

Engineer support is well simulated in the CCTT. The engineer has his own console where he digs fighting positions and tank ditches, emplaces minefields and wires obstacles, etc. This allows the engineer to work with maneuver commanders and fire supporters to build engagement areas (EAs) that protect the force and integrate obstacles into the commander's concept of the operation.

The CCTT can change direct fire engagement ranges and marksmanship. In our scenario, we reduced the direct fire engagement ranges for the Blue Forces and OPFOR to two kilometers, which compensated for the four-kilometer visual range in the CCTT. This allowed observers to refine targets and determine trigger points to affect the battle with indirect fires before the OPFOR entered direct fire range.

We also had to adjust the marksmanship level for simulated forces. During testing of the simulation, we discovered OPFOR simulated combat systems would overpower a numerically superior simulated Blue Force for no reason. We were able to adjust the marksmanship proficiency of both forces "to level the playing field" and meet our training objectives.

One of the greatest capabilities of the CCTT is its staff. While planning and executing the exercise, the CCTT personnel quickly responded by creating workarounds to enhance our training. During planning, the staff found a way to use the dismounted platoon simulator for the COLT to give us all the capabilities of the module while creating a visual signature of only two soldiers. During execution, the CCTT staff promptly converged on challenges to solve problems and create workarounds. When a solution couldn't be found, they immediately informed us of the problem and generated reports to their higher headquarters to solve the problem for future operations.

*CCTT Limitations.* There are many limitations in CCTT because it was designed for training close combat with M1s and M2s, not fire support. The key is for units to be aware of the limitations and develop techniques to achieve their training objectives.

The visual limit in a CCTT simulator is four kilometers. There are several workarounds for this problem. In most instances, we either placed observers within the four kilometer range of what they needed to see or adjusted direct fire engagement ranges so observers could accomplish essential fire support tasks (EFSTs) before OPFOR vehicles entered direct fire range.

We also were able to adjust the OPFOR's rate-of-march and interval between forces. By slowing the rate-of-march, we allowed the OPFOR to spend more time in the EA. In addition, by decreasing the interval between forces we still stressed the need for quick and accurate indirect fires in support of the maneuver forces.

Because simulators aren't supplied with global positioning systems (GPS), track commanders and observers must use land navigation skills to determine their location and be able to maneuver in the simulation. We helped observers refine their location by finding their position on the CCTT computers, which are in various locations in the facility.

Because the CCTT only has one FIST-V, we wanted to place two company FISTs in Bradleys to conduct fire support operations and familiarize our FISTs with their future vehicle. However, we discovered the CCTT Bradley simulator wasn't equipped with a targeting system. Therefore, we opted to use M1s because of their laser rangefinder capability.

While SINCGARS mock-ups are nearly identical to their real-world cousins, they only operate in single-channel, plain text mode. Operators aren't able to load radios and establish frequency-hop communication or wrestle through communications problems associated with frequency-hop operations.

However, the CCTT simulation does play radio maximum range and terrain interferes with communications. While this feature forces you to work out a plan to keep radio platforms within range, the system doesn't provide retransmission capability. We overcame this obstacle by placing key vehicles, such as the TF FSE and DS battalion FDC, in positions where a re-transmission vehicle normally would have gone.

The maximum range for 155-mm artillery is 17 kilometers. This is not a serious limitation for most of the operations but must be accounted for during the planning phase. Also, the unit basic load (UBL) only has four rounds of DPICM on the gun and ammo carrier. The CCTT simulation fires ammo off the gun and ammo carrier until the round type is exhausted and then places the gun out of action for 30 minutes as it conducts re-supply operations. Adjusting the UBL to meet mission requirements during the planning phase will alleviate this situation.

Another CCTT problem is that the simulation will lock-up if there's too much activity. Every entity (vehicle, minefield, bullet, building, etc.) in the simulation uses computer memory. When entities are moving around and shooting at each other, memory usage jumps considerably.

During the planning phase, we ran the simulation to ensure we were able to move forces and conduct attacks in accordance with doctrine, standing operating procedures (SOPs) and our specific plans. We discovered we could replicate some entities with less memory with no difference in visual effect to the soldier in a simulation module.

For instance, we knew from a previous exercise that the large amount of memory required for scatterable minefields helped lead to the simulation failure. We reduced the amount of memory used in our exercise by using conventional minefields with a lane through them in place of a scatterable minefield.

During the simulation, we told the OPFOR commander to drive his reconnaissance through the lane in the minefield. Arrival of the reconnaissance element triggered a call from an FO to emplace a family of scatterable mines (FASCAM) minefield. We fired the grid with DPICM rounds that the observer in the simulator thought was scatterable mines. When the OPFOR commander sent in his main body formation, we instructed him to run into the preplanned conventional minefield. By using this technique, we provided quality visual effects for observer training and ensured the simulation ran continuously during the entire exercise.

CCTT isn't a perfect system. For example, going back and forth between regular view and binocular view on the FO console of the dismounted station crashed the module. Once we identified the problem, the facility engineers got the module up and running again in less than five minutes.

While the CCTT was not developed specifically as a fire support trainer, it can be adapted to provide inexpensive, quality training for fire supporters. We found that the CCTT dramatically improved our ability to provide fires in support of combined arms operations and identified tasks needing additional training.

With a little imagination, any FA unit can use its CCTT to gain similar results.

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# HONOR
## Strict Conformity to What's Right

The Army has seven values by which her soldiers strive to live: Loyalty, Duty, Respect, Selfless Service, Honor, Integrity and Personal Courage. This brief piece features Medal of Honor (MOH) winner George P. Hays, who, as a first lieutenant with the 10th Field Artillery, 3d Infantry Division, distinguished himself near Greves Farm in France on 14-15 July 1918 during a German attack. The actions of George Hays epitomize the Army value of Honor.

Lieutenant Hays, while wounded and operating under most difficult circumstances, did what was right. As a runner, he reestablished lines of communication after his commo equipment was destroyed at the beginning of a massive two-day German artillery barrage. He continuously moved back and forth on horseback, responsible for effective fire from his position, and rallied two French batteries, directing their fire. He played a major role in stopping the last German offensive of World War I.

**MOH Citation: George Price Hays, Number 34, 1919.** "At the very outset of the unprecedented artillery bombardment by the enemy, his line of communications was destroyed beyond repair. Despite the hazard attached to the mission of runner, he immediately set out to establish contact with the neighboring post of command and further establish liaison with two French batteries, visiting their position so frequently that he was mainly responsible for the accurate fire therefrom. While thus engaged, seven horses were shot under him and he was severely wounded. His activity under most severe fire was an important factor in checking the advancing enemy."

**Hays, The Man.** George P. Hays was born 27 September 1892 in China. He entered service in Okarche, Oklahoma, in 1917 as a Second Lieutenant, Field Artillery in the Officer Reserve Corps. He came into the Army at a time of great significance and change for the Field Artillery. World War I was the first large-scale use of indirect fire with the corresponding rise of the role of the forward observer.

After World War I, he received his Bachelor of Science from Oklahoma A&M in 1920. He attended the Battery Officers School in 1922, the Command and General Staff College in 1934 and the Army War College in 1940.

Then in 1940-1941, he commanded the 99th Field Artillery (Pack) with Captain William O. Darby as one of his battery commanders. Darby later was the organizer and leader of the World War II Darby's Rangers and noted for his innovative use of the 4.2-inch mortar. He credited Hays with teaching him much about the aggressive use of indirect fire.

Hays went on to command the 10th Mountain Division in Italy during World War II. He also commanded the US Forces in Austria in 1946 and then the Sixth US Army, 1946-1947. Later, he served as the US Representative to the Allied Military Government Coordinating Committee.

In 1953, Lieutenant General George P. Hays retired from the Army. He died in September 1979. His other decorations include the Distinguished Service Medal, Silver Star with Oak Leaf Cluster, Legion of Merit, Bronze Star and Purple Heart.

*(Editor: Information for this article was taken from the "American Artillery and the Medal of Honor," Military History Monograph 49, by Field Artilleryman David T. Zabecki, USAR.)*